

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended): ~~In combination with~~ A process for geometrical modeling of a physical bodies, body having physical surface portions ~~a method for evaluation and design of a structural product formed in accordance with said geometrical modeling,~~ including the steps of: establishing a multiple topological views respectively representing said ~~structural product~~ physical surface portions of the physical body through use of inner and outer boundaries; associating unique properties and analysis of said physical body with said topological views including an interconnection between the physical surface portions; and mapping said multiple topological views to a common and unique base geometry of the physical body.

2. (Currently amended): The ~~method~~ process as defined in claim 1 wherein said topological views overlap to form said interconnection between the physical surface portions within a parametric domain of said base geometry defining physical space of said ~~structural product~~ physical body.

3. (Currently amended): ~~In combination with the method~~ The process as defined in claim 1 including a method step for connecting boundary elements of said topological views to establish said interconnection between the physical surface portions, ~~where~~ such boundary elements include points on curves, edges on surfaces, faces on solids

Claims 4-7 (Canceled)

Claim 8. (New): The process as defined in claim 1, wherein said physical surface portions are intersecting curved surface objects interconnected along said intersection.

Claim 9. (New): The process as defined in claim 1, wherein said physical surface portions are solid volume objects connected to each other along said interconnection.

Claim 10. (New): A process for computer-aided geometric modeling of a structural product, comprising the steps of: plotting topological views of physical surface portions of the physical product having boundary elements interrelated by connectors; and mapping said topological views of the physical surface portions to the exclusion of those having the interrelated boundary elements thereof intersecting.

Claim 11. (New): The process as defined in claim 10, wherein said physical surface portions of the structural product are curved surface objects interrelated by intersection along the intersecting boundary elements.

Claim 12. (New): The process as defined in claim 9, wherein said physical surface portions of the structural product are solid volume objects having the interrelated boundary elements on a common connector surface.

13. (New): A method of product modeling used in computer-aided-design to represent physical bodies or product design from geometric entities of multiple dimensionality and topology, said method comprising the steps of:

- defining by instantiation a geometric data entity,

- wherein each of said geometric data entity is selected from a group consisting of at least one Cartesian location, at least one Ppoint entity, at least one Pcurve entity, at least one Edge entity, at least one CoEdge entity, at least one CoPoint entity, at least one EdgeLoop entity, at least one Surface entity, at least one Face entity, at least one OrientedClosedShell entity and at least one Solid entity;

- establishing at least one Topological View using said geometric data entity to represent a physical region of a physical body or a product model;

- defining a property for each of said Topological Views to represent a physical, functional or a behavioral characteristic of said region of said physical body or said product model; and

- wherein said Topological View is selected from the group consisting of said Face entity, Surface entity and Solid entity,

defining said Surface entity with properties;
 defining said Face entity with properties and EdgeLoop boundaries;
 defining said Solid entity with properties and OrientedClosedShell entity boundaries;
 defining said Surface entity properties, said Face entity properties and said Solid entity properties for each of said Topological Views to represent said physical, functional or behavioral characteristic or said region of said physical body or product model; and
 wherein a first parametric geometric base entity of said Ppoint is said Pcurve,
 wherein said second parametric geometric base entity of said Pcurve is said Surface entity,
 wherein said Edge entity is a segment of said Pcurve bounded by 2 Ppoints entities,
 wherein said EdgeLoop entity is at least one connected Edge entity that is a closed loop, and
 wherein said EdgeLoop entity is a boundary for said Face entity,
 defining an overlapping of at least two EdgeLoop boundaries sharing said Surface entity.

14. (New): A method of product modeling used in computer-aided-design to represent physical bodies or product design from geometric entities of multiple dimensionality and topology, said method comprising the steps of:

defining by instantiation a geometric data entity,
 wherein each of said geometric data entity is selected from a group consisting of at least one Cartesian location, at least one Ppoint entity, at least one Pcurve entity, at least one Edge entity, at least one CoEdge entity, at least one CoPoint entity, at least one EdgeLoop entity, at least one Surface entity, at least one Face entity, at least one OrientedClosedShell entity and at least one Solid entity;
 establishing at least one Topological View using said geometric data entity to represent a physical region of a physical body or a product model;

defining a property for each of said Topological Views to represent a physical, functional or a behavioral characteristic of said region of said physical body or said product model; and

wherein said Topological View is selected from the group consisting of said Face entity, Surface entity and Solid entity,

defining said Surface entity with properties;

defining said Face entity with properties and EdgeLoop boundaries;

defining said Solid entity with properties and OrientedClosedShell entity boundaries;

defining said Surface entity properties, said Face entity properties and said Solid entity properties for each of said Topological Views to represent said physical, functional or behavioral characteristic or said region of said physical body or product model; and

wherein a first parametric geometric base entity of said Ppoint is said Pcurve,

wherein said second parametric geometric base entity of said Pcurve is said Surface entity,

wherein said Edge entity is a segment of said Pcurve bounded by 2 Ppoints entities,

wherein said EdgeLoop entity is at least one connected Edge entity that is a closed loop, and

wherein said EdgeLoop entity is a boundary for said Face entity,

defining a sharing of an Edge entity by 2 or more EdgeLoop entities sharing said Surface entity.

15. (New): A method of product modeling used in computer-aided-design to represent physical bodies or product design from geometric entities of multiple dimensionality, topology and connectivity said method comprising the steps of:

defining by instantiation a geometric data entity,

wherein each of said geometric data entity is selected from a group consisting of at least one Cartesian location, at least one Ppoint entity, at least one Pcurve entity, at least one Edge entity, at least one CoEdge entity, and at least one CoPoint entity,

establishing CoPoint entity connecting at least 2 Ppoints entities; and
establishing CoEdge entity connecting at least 2 Edge entities;
wherein said CoPoint entity is a collection of Ppoints that is containing a
Cartesian location in space,
wherein said CoEdge entity is a collection of Edge entities that is a single
curve in Cartesian space, and
wherein said CoEdge entity contains a single n-dimensional function that
contains the domain space of each Edge entity as a range coefficient of CoEdge function.